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MULTICHANNEL IMPULSE REMOTE CONTROL SYSTEM

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Numbers in parentheses refer to the author's bibliography appended.

A figure is also appended to the report.]

A multichannel pulse remote control system has been developed and a laboratory model built at the Institute of Automatics and Telemechanics, Academy of Sciences USSR. The system is intended for the transmission of a large number of readings to a dispatching point when the measured quantity has reached a previously established value. The system permits the registration and signaling. Any relay devices may serve as the transducers.

The system is based on magnetic elements with a rectangular hysteresis loop, whose use considerably increases the reliability and life of the system (1), in comparison with either electromagnetic contact relays or electron tubes. Moreover, in the case of a ten-channel system, ten readings per second may be transmitted in each channel. When necessary, the speed of the system may be considerably increased.

The figure represents the schematic of a system with three channels (even though in principle the number of channels may be many times greater), the transmission part of which consists of a commutator switch made up of rectangular-loop magnetic elements and operating directly from peak transformers which are supplied from a regular ac line.

In the output windings of the commutator switch a train of pulses is formed, the first of which is the synchronizing pulse and differs from the rest by its increased amplitude. If a parameter in any channel changes, then the output windings of the commutator switch are closed and measuring pulses are transmitted to the line together with the synchronizing pulse; in the reverse case no measuring impulses are fed into the line.

The pulse train travels to the receiver along a two-conductor communication line or a radio path (in the latter case frequency modulators and demodulators must be added). The synchronizing pulse is separated out and fed to the commutator switch of the receiver. On the other side the whole measuring pulse train, with the reduced synchronizing pulse, is fed to the channel dividers (2), each of which is tripped when the pulses from the transmitter and the receiving commutator switch match.

Both the receiving commutator switch and the channel dividers are constructed of rectangular-loop magnetic elements.

The pulses separated out by the channel dividers are fed to recording devices, which can be of great variety, as, for example, thyratron circuits or simply telephone counters.

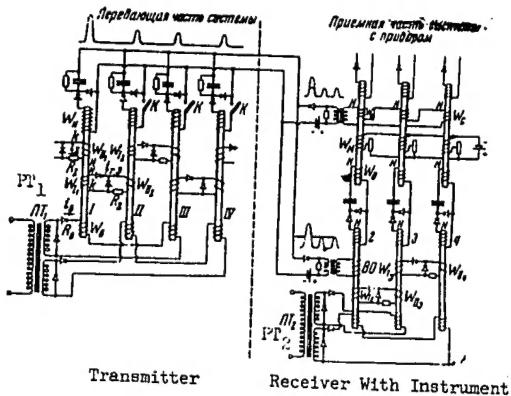
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Each working cycle of the receiving commutator switch begins after the synchronizing pulse has been fed to its first core; as a result, there is compulsory synchronization of the commutator switches, and the possibility of accumulation of errors over a period of time is excluded.

[Figure appended.]

BIBLIOGRAPHY

1. Tutevich, V. N., Zhzhikashvili, V. A. "Commutator Switch composed of Magnetic elements with a square hysteresis loop," Avtomatika i Telemekhanika, No 1, 1954
2. Tutevich, V. N., "Magnetic Modulators", Avtomatika i Telemekhanika, No 6, 1954



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